

**REMARKS**

The courtesy of a telephone conference with Examiner Ludlow on May 17, 2007 is greatly appreciated.

To expedite prosecution, the claims have been amended to include additional limitations previously present in dependent claims. Applicants submit that the claims prior to amendment are distinguished from the prior art for the reasons previously presented.

Claim 16 has been amended to incorporate the limitations of Claim 26 previously presented and to include the additional limitation that the suppressor is disposed in a housing separate from the contaminant-purifying housing.

New Claim 30 includes the limitations of previously amended Claim 18. It provides that the contaminant-purifying housing further comprises a charged barrier permitting the flow of ions only of one charge disposed along the purifying flow channel with the charge being the same as the charge of the chromatography separation medium exchangeable ions.

New claim 31 incorporates into previously presented Claim 16 the limitations of previously presented Claim 22. It recites a flow-through ion exchange medium with exchangeable ions of the same charge, positive or negative, as the chromatography separation medium exchangeable ions disposed in the purifying flow channel. Support for the foregoing systems illustrated in Figure 2 and in the present specification, for example, at page 6 line 15 through page 8 line 7.

Referring to Paragraph 2 on page 2 of the Office Action, the word "and" has been added in Claim 16 and in new Claims 30 and 31.

Referring to Paragraphs 3 and 4, also on page 2 of the Office Action, the limitation "said purifier flow channel being disposed in said flow path" added in the prior amendment has been cancelled in order to expedite prosecution.

Referring to Paragraphs 4 through 7 on page 4 of the Office Action, Applicant submits that the disposition in Claim 16 of the sample injector downstream from the purifying flow channel upstream from the separation medium outlet that distinguishes from the suppressor of Anderson in which the sample injector is upstream from the purifying flow channel outlet and downstream from the separation medium inlet. It is submitted that a person with ordinary skill

would understand that a limitation refers to the primary flowing stream and not to the recycle line in Anderson.

However, in order to expedite prosecution, the claims have been amended to further distinguish from Anderson.

Claim 16 now recites a suppressor in a housing separate from the contaminant-purifying housing of a particular configuration. Anderson recites a system which includes a sample injector, a chromatography separation column, and a combination suppressor and detector. There is no suggestion in Anderson of any contaminant ion purifier in a separate housing from the suppressor. In fact, it is the suppressor of Anderson that the Office Action had relied upon for disclosing the contaminant-purifying housing of Claim 16. Thus, the prior art does not suggest this combination. Accordingly, it is submitted that Claim 16 is unobvious.

New Claim 30 recites that the contaminant -purifying housing further comprises a charged barrier permitting the flow of ions only one charge, positive or negative, disposed along the purifying flow channel in contact therewith and that the barrier is of the same charge, positive or negative, as the chromatography separation medium exchangeable ions.

This is fundamentally different from a suppressor as disclosed in Anderson. Referring to Figure 3 of Anderson, the analyte ion ( $X^-$ ) flows with the eluent electrolyte (sodium hydroxide) into the suppressor. It is well recognized that the function of a suppressor is to remove the electrolyte ions in the eluent of opposite charge to the analyte ions which have been separated in a chromatography column. For example, for the analysis of anions, the chromatography column includes a packed bed of ion exchange resin including exchangeable ions of the same charge as the analyte ions to be chromatographically separated. Thus, for the analysis of anions the chromatography packed bed includes exchangeable anions. The positive sodium ions of the electrolyte removed in Anderson during suppression are of opposite charge to the negatively charged anion analytes. This is illustrated in Anderson Figure 3 by the designation HX. As illustrated in Figure 2 of Anderson, in the suppressor the cation of the electrolyte ( $Na^+$ ) is removed for anion separation. Thus the  $Na^+$  is removed and the anion ( $X^-$ ) flows in the acid form (HX) to the detector. As further illustrated in Figure 3, for anion analysis, the ion exchange resin in the suppressor is  $H^+$  in the cation ( $H^+$ ) form.

Also, filters 26a and 26b have cation exchange resin encapsulated in a filter mesh. Assuming Filter Mesh 26a and 26b were considered to be a membrane, it would be positively charged for the analysis of anions. In contrast, as set forth above, the chromatography resin in the column is of negative charge for the chromatographic separation of the anion analytes. It is fundamental to a suppressor that the membrane be of opposite charge to the exchangeable ions of the chromatographic exchange resin. If it were of the same charge, the analyte ions would be removed along with electrolyte ions, defeating analysis.

In contrast, in Claim 16, the charged barrier in the contaminant-purifying housing is of the same charge as the chromatography separation medium exchangeable ions. This is a fundamental difference from Anderson and highlights the difference in what is being accomplished. The apparatus of Claim 16 removes such contaminant ions prior to mixing with the analyte ions. This enables the removal of contaminant ions of the same charge as the analyte ions.

Referring to new Claim 31, flow-through ion exchange medium having exchangeable ions of the same charge as the chromatography separation exchangeable ions are disposed in the purifying flow channel. For the reasons set forth above, Anderson teaches, as it must, that the disclosed suppressor has a packed bed of opposite charge to the chromatography separation medium exchangeable ions. Thus, anions which are separated on a bed with exchangeable anions flow with the sodium hydroxide illustrated in Figure 3 of Anderson into the suppressor where the packed bed is positively charged as indicated by the  $H^+$  symbol on the particles in the bed. For the reasons set forth above, new Claim 31 clearly distinguishes from Anderson because the polarity of the exchangeable ions on the ion exchange medium in the purifying flow channel of Claim 30 is the same as the polarity of the chromatography separation medium exchangeable ions. This illustrates the fundamentally different structure and operation of the contaminant-purifying device of the present invention compared to the suppressor of Anderson. In that regard, it is noted that Paragraph 8 of the Office Action recognizes that previously amended Claim 22 distinguishes from the prior art. In essence, Claim 31 rewrites Claim 22 in independent form.

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-442-1000.

Respectfully submitted,

**SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT**

Firm

David J. Brezner, Reg. No. 24,774

**Customer Number 67374**

or

Morgan, Lewis & Bockius

Individual name

One Market, Spear Street Tower

Telephone : 415 442 1174

Fax: 415 442 1001

Signature

*David J. Brezner*

Date

*6/8/07*